Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 60 **January, 1958** **No. 709**

A NEW SPECIES OF SAMOLUS (PRIMULACEAE) FROM MEXICO

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The last comprehensive treatment of the genus *Samolus* L. (anomalous among the *Primulaceae* by the half-inferior position of the ovary) appeared in the monograph of the *Primulaceae* by Pax and Knuth (1905). According to this work only two species are characterized by ebracteate pedicels and by the absence of staminodia: *S. ebracteatus* HBK. (1818) [including *S. alyssoides* Heller (1895) and *S. cuneatus* Small (1897)] and *S. cinerascens* (Robinson) Pax & R. Knuth (l. c.; cf. Robinson, 1892). The presence of a group of small glandular hairs at the base of each corolla-lobe, rendering the corolla-throat more or less pubescent, is another feature common to both and unknown elsewhere in the genus. No other species of the genus so characterized has subsequently been described. The species here proposed as new is evidently related to the two above, inasmuch as it shares with them the characters thus far enumerated. One of these characters has served as the primary basis for establishing a separate genus. Thus, while specific affinities are clear, the assignment of the new species to genus deserves further comment.

Publication of the segregate genus *Samodia*, originally proposed but not validly published by Baudo (1843), was validated by Small (1933), who accorded generic significance almost solely to the absence of staminodia. Typified by *Samolus ebracteatus* HBK. and to date nomenclaturally monotypic, this genus has never enjoyed general acceptance. This is partly due to the fact that elsewhere in the *Primulaceae* conservative taxonomists have

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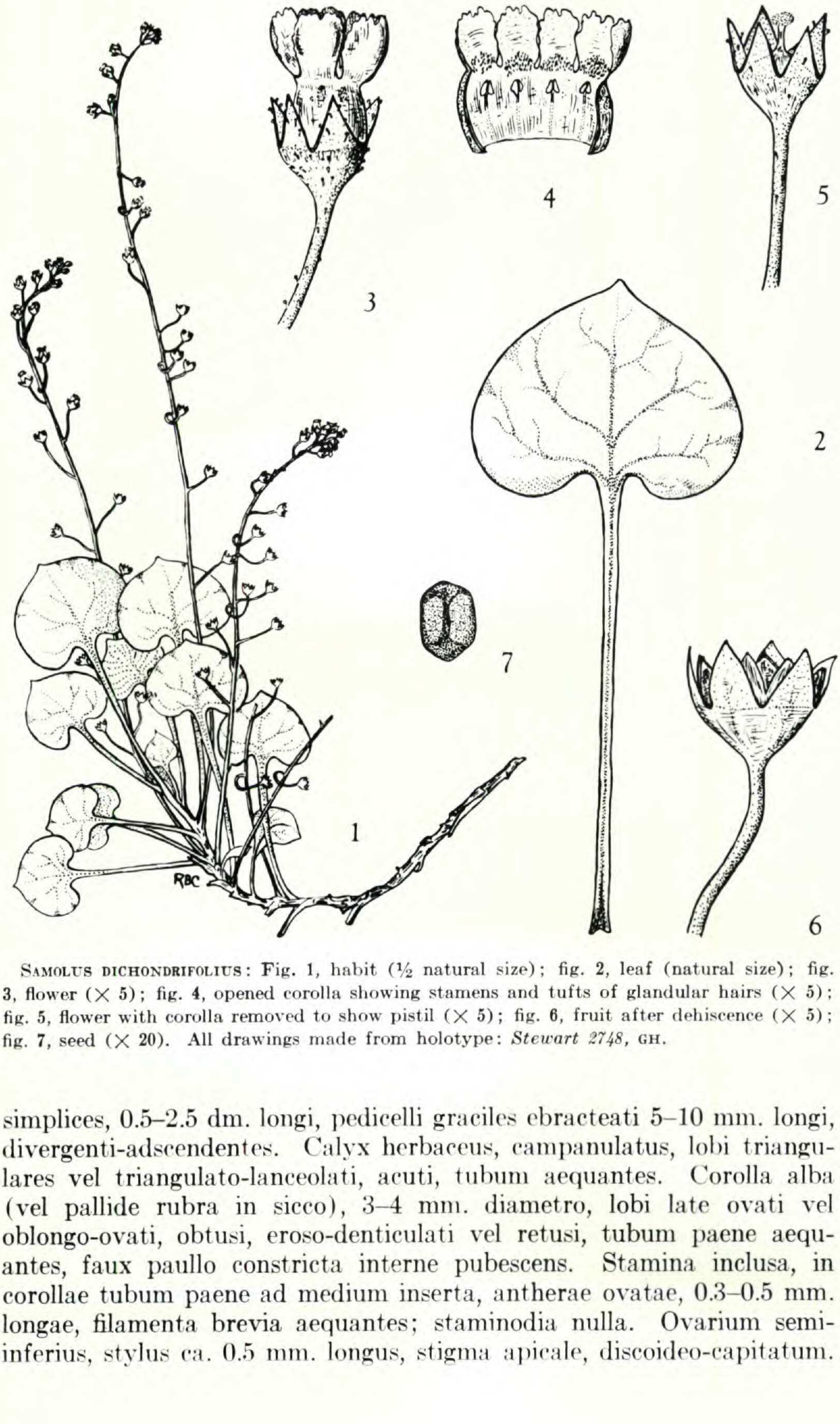
not attributed generic importance to the presence of staminodia in an otherwise non-staminodial group (cf. *Lysimachia* [Tourn.] L. subgenus *Selencia* Bigelow; *Steironema* Raf.). As a character, moreover, the presence or absence of staminodia in *Samolus* cuts across a long-established line, perhaps demarcating groups equally as natural, between those species of herbaceous habit with smooth herbage, as exemplified by *Samolus ebracteatus*, and those of suffruticose habit with glandular-porous herbage, as exemplified by *Samolus cinerascens*. Generic segregation on the basis of differences in habit or general appearance alone, however, seems wholly unjustified. The other characters distinguishing *Samodia*, relative length of tube to lobes of the corolla and level of adnation of the stamens, are generally disregarded as representing merely matters of degree. Under the circumstances the single Linnaean genus *Samolus* is here recognized.

The new species is based upon two unicate collections in the Gray Herbarium found among undetermined *Samolus* specimens examined in a survey of the morphological variation and geographical distribution of *S. ebracteatus* for the southeastern United States. These specimens were collected in western Coahuila, Mexico, by Reynaldo Santos, under the direction of Robert M. Stewart, and bear the latter's collection numbers: *Stewart 2748*, 25 September 1942, holotype—"*Rancho del Coyote* (1 km. S.E.) gypsum slopes, scarce, ascending, 2 dm., fl. white. Base of mountains along the eastern margin of the Valle de Acatita." *Stewart 2805*, 2 October 1942, paratype—"*Cañon del Agua Grande* by water, common, fl. white. Canyons in the Sierra del Sobaco a few kilometers west of Las Delicias."

Samolus dichondrifolius Channell, sp. nov.[2] Herbae perennes, caulescentes (laeves, non glanduloso-porosae), 1–3 dm. altae, caules repentes vel decumbentes, apices foliati adscendentes, axillae foliorum superiorum racemos graciles nudos gerentes. Caulis glaber, 2.5 dm. longus, vel ultra, internodii 4–8 mm. longi, pars vestustior basibus petiolaribus foliorum disruptorum vestita, apices folia numerosa alterna vel approximata gerentes. Folia (2–)4–7(–9) cm. longa, simplicia, glabra, supra griseoviridia, subtus pallida vel glauca, laminae integrae reniformes apiculatomucronatae, 1–3 cm. latae, 1–2(–3) cm. longae, basi in petiolis gracilibus linearibus complanatis (1–)2–5(–6) cm. longis abrupte contractae. Racemi, pedicelli calycesque minute glanduloso-pubescentes. Racemi

[2] The Latin description was kindly prepared by Dr. R. C. Foster, Gray Herbarium.



SAMOLUS DICHONDRIFOLIUS: Fig. 1, habit (½ natural size); fig. 2, leaf (natural size); fig. 3, flower (× 5); fig. 4, opened corolla showing stamens and tufts of glandular hairs (× 5); fig. 5, flower with corolla removed to show pistil (× 5); fig. 6, fruit after dehiscence (× 5); fig. 7, seed (× 20). All drawings made from holotype: *Stewart 2748*, GH.

simplices, 0.5–2.5 dm. longi, pedicelli graciles ebracteati 5–10 mm. longi, divergenti-adscendentes. Calyx herbaceus, campanulatus, lobi triangulares vel triangulato-lanceolati, acuti, tubum aequantes. Corolla alba (vel pallide rubra in sicco), 3–4 mm. diametro, lobi late ovati vel oblongo-ovati, obtusi, eroso-denticulati vel retusi, tubum paene aequantes, faux paullo constricta interne pubescens. Stamina inclusa, in corollae tubum paene ad medium inserta, antherae ovatae, 0.3–0.5 mm. longae, filamenta brevia aequantes; staminodia nulla. Ovarium semiinferius, stylus ca. 0.5 mm. longus, stigma apicale, discoideo-capitatum.

Capsula semi-inferior, ca. 3 mm. diametro, muris crassis, in valvis triangularibus paullo recurvatis dehiscens. Semina numerosa, atro-brunnea vel nigra, complanata, ovoideo-angularia, axis longus 0.25–0.5 mm., integumenta polygonali-reticulata.

Caulescent perennial herbs (leaves smooth, not glandular-porous) 1–3 dm. in height, with repent or decumbent stems, the leafy tips ascending, bearing slender naked racemes from the upper leaf-axils. Stem glabrous, 2.5 dm. or more in length, the internodes 4–8 mm. long, the older portion bearing the petiolar bases of old or broken foliage, the tips bearing numerous alternate or approximate leaves. Leaves (2–)4–7(–9) cm. long, simple, glabrous, gray-green above, pale or glaucous below, the reniform entire blades apiculate-mucronate, 1–3 cm. wide, 1–2(–3) cm. long, abruptly contracted into slender, linear, flattened petioles (1–)2–5(–6) cm. long. Racemes, pedicels and calyces minutely glandular-pubescent. Racemes simple, 0.5–2.5 dm. long, the slender ebracteate pedicels 5–10 mm. long, spreading-ascending. Calyx herbaceous, campanulate, the lobes triangular or triangular-lanceolate, acute, equalling the tube. Corolla white (or when dry flesh-pink), 3–4 mm. in diameter, the lobes broadly ovate or oblong-obovate, obtuse, erose-denticulate or retuse, nearly equalling the tube, the slightly constricted throat pubescent within. Stamens included, inserted on the corolla-tube near the middle, the anthers ovate, 0.3–0.5 mm. long, equalling the short filaments; staminodia wanting. Ovary ½ inferior, the style about 0.5 mm. long, capped by the discoid-capitate stigma. Capsule ½ inferior, about 3 mm. in diameter, the free portion thick-walled and dehiscent by slightly recurving triangular valves. Seeds numerous, dark brown or black, flattened, ovoid-angular in outline, the long axis 0.25–05 mm., the testa polygonal-reticulate. (Figs. 1–7.)

Samolus dichondrifolius is more closely related to the widespread *S. ebracteatus* than to *S. cinerascens*. Known only from San Luis Potosí, Mexico, where it grows on alkaline plains, the latter species is distinguished by the suffruticose, subligneous habit, the conspicuously glandular-porous, linear or linear-lanceolate, acute leaves, the linear-lanceolate sepals, exceeding in length the valves of the mature capsule, by the entire corolla-lobes, anthers 1.5 mm. long, and by the non-dilated stigmas.

Samolus ebracteatus (sensu lato) is distributed in Cuba, Florida, Texas, Oklahoma, New Mexico and from Coahuila, Nuevo León and Tamaulipas southward into Oaxaca, as well as in Baja California, Mexico. Considerably variable in habit, this species apparently grows equally well in calcareous clay, sandy soils, sandy loam, humus and on almost bare, eroded limestone (cf. Small, 1934). According to herbarium data the habitats include

pine woods, brackish flats and salt marshes, gypsum ravines, chalk bluffs, limestone rocks, edges of streams, ponds and springs, calcareous clay and granitic soils. It is not surprising, therefore, that practical difficulties have arisen in the interpretation of local variation, even though the species is typically riparian. This species is characterized by the herbaceous habit, glabrous herbage, broad spatulate to spatulate-rotund leaves with broad, gradually contracted, vaginate bases, often decurrent on the stem, the triangular-ovate sepals, merely equalling the valves of the mature capsule, by the erose-denticulate corolla-lobes, anthers only about 0.75–1.0 mm. long, and by the capitate stigmas.

The new species is distinguished from all other members of the genus by the distinctive leaves. The reniform-apiculate blades and the long, linear petioles give the foliage a striking resemblance to that of species of *Dichondra* (*Convolvulaceae*), whence the epithet. Although sharing the same fundamental floral structure, including the irregularly erose-denticulate corolla-lobes and capitate stigmas, *S. dichrondrifolius* may be distinguished from *S. ebracteatus* by the smaller size of the flowers and by the narrower, more slender inflorescences, as well as by obvious foliage differences. *Samolus ebracteatus* has corollas 4–9 mm. in diameter and pedicels 10–20 mm. long; *S. dichondrifolius* has corollas only 3–4 mm. or less in diameter and pedicels only 5–10 mm. long. In addition, the corollas of the latter species are white; those of *S. ebracteatus* are generally pigmented, varying in color from pink to purple or even red. The anthers of *S. dichondrifolius* are only about 0.3–0.5 mm. long.

Little is known, except in general terms, about the type locality and associates of the new species. The descriptive account by Muller (1947) of the vegetation and climate of Coahuila indicates that the plains and basins of the southern, western and northern three-fourths of the state are extremely arid and are occupied chiefly by a strictly desert vegetational type designated as Chihuahuan Desert Shrub. The vegetation is polymorphic, consisting of low, sparse perennials and ephemeral annuals. *Larrea tridentata* (DC.) Cov. is the most characteristic species and the variant vegetational types are described by Muller in terms of associates of that species and those which occasionally replace it. The only known stations for *Samolus dichondrifolius*

are located within this vegetational type in western Coahuila, near the southeastern corner of Chihuahua. As already indicated, the holotype was collected from a gypsum slope; the paratype near water.

The studies of Johnston (1941) of extensive gypsum flats and gypseous ridges in the same vicinity have yielded a rather extensive list of gypsophiles, including species of *Dicranocarpus*, *Sartwellia*, *Nerisyrenia*, *Drymaria*, *Nama*, etc. Whether or not *Samolus dichondrifolius* may be classified as a strictly gypsophilous species, however, remains to be determined.

It is to be noted that *Samolus ebracteatus* also occurs in this area, near water, in relatively close proximity to the type locality of the new species (cf. *Stewart 2729*, *2735* and *2942:* GH) and elsewhere in gypsum ravines (cf. *Johnston 3631* and *Waterfall 6142:* GH). According to the collection data the two species flower simultaneously, at least in western Coahuila. Insofar as present collections indicate, however, the two species retain their morphological identity and are probably isolated genetically.

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